

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
2 August 2001 (02.08.2001)

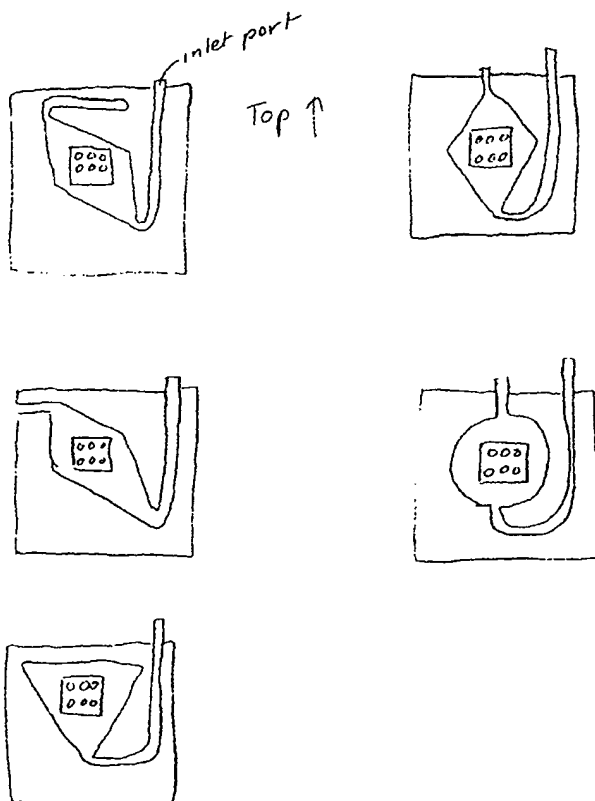
PCT

(10) International Publication Number  
**WO 01/54813 A3**

- (51) International Patent Classification<sup>7</sup>: **B01L 3/00** (72) Inventor: **DUONG, Hau, H.**; 573 North Hoover Street, Los Angeles, CA 90004 (US).
- (21) International Application Number: **PCT/US01/01150** (74) Agents: **TRECARTIN, Richard, F.** et al.; Flehr Hohbach Test Albritton & Herbert LLP, 4 Embarcadero Center, Suite 3400, San Francisco, CA 94111-4187 (US).
- (22) International Filing Date: 11 January 2001 (11.01.2001)
- (25) Filing Language: English (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW.
- (26) Publication Language: English
- (30) Priority Data:  
60/175,539 11 January 2000 (11.01.2000) US  
60/145,840 3 November 2000 (03.11.2000) US
- (71) Applicant: **CLINICAL MICRO SENSORS, INC.**  
[US/US]; 757 South Raymond Avenue, Pasadena, CA 91105 (US).
- (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE,

[Continued on next page]

(54) Title: **DEVICES AND METHODS FOR BIOCHIP MULTIPLEXING**



(57) Abstract: A biochip cartridge comprising: a) a reaction chamber comprising: i) a substrate comprising an array of electrodes, each comprising: A) a self-assembled monolayer; and B) a capture binding ligand; ii) an inlet port for the introduction of reagents; and b) interconnects to allow the electrical connection of said electrodes to a processor.

WO 01/54813 A3



IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

(88) Date of publication of the international search report:  
4 April 2002

**Published:**

— with international search report

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 01/01150

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 B01L3/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 B01L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P, X	WO 00 62931 A (KAYYEM JON FAIZ ;CLINICAL MICRO SENSORS INC (US)) 26 October 2000 (2000-10-26) page 2 page 38, line 30 -page 44, line 10 page 108, line 25 -page 109, line 3 ---	1-12, 18, 19, 22
X	WO 97 41425 A (PENCE INC ;UNIV MCGILL (CA)) 6 November 1997 (1997-11-06) page 6, line 32 -page 8, line 23; figure 1 ---	1-9
X	US 5 519 635 A (MIYAKE RYO ET AL) 21 May 1996 (1996-05-21)  column 10, line 18 -column 13, line 29; figures 11-13  --- -/--	10-13, 18, 19, 21, 22



Further documents are listed in the continuation of box C



Patent family members are listed in annex.

## \* Special categories of cited documents

\*A\* document defining the general state of the art which is not considered to be of particular relevance

\*E\* earlier document but published on or after the international filing date

\*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

\*O\* document referring to an oral disclosure, use, exhibition or other means

\*P\* document published prior to the international filing date but later than the priority date claimed

\*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

\*X\* document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

\*Y\* document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

\*8\* document member of the same patent family

Date of the actual completion of the international search

27 September 2001

Date of mailing of the international search report

05/10/2001

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Hodson, M

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 01/01150

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 98 12539 A (MESO SCALE TECHNOLOGIES LLC) 26 March 1998 (1998-03-26)	1-7, 9, 10, 13, 18, 19, 21, 22
A	figures 1, 1A, 47, 69	8, 11, 12, 14-17, 20, 23
A	--- US 5 741 462 A (NOVA MICHAEL P ET AL) 21 April 1998 (1998-04-21) column 4, line 45 -column 6, line 51 ---	10, 13-20
A	--- WO 98 05424 A (CHOW CALVIN Y H ; CALIPER TECHN CORP (US)) 12 February 1998 (1998-02-12) page 11 -page 15 ---	1-22
A	--- WO 98 57159 A (CLINICAL MICRO SENSORS INC) 17 December 1998 (1998-12-17) ---	
A	--- US 5 866 345 A (WILDING PETER ET AL) 2 February 1999 (1999-02-02) -----	

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 01/01150

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 0062931	A	26-10-2000	AU 4368000 A WO 0062931 A1	02-11-2000 26-10-2000
WO 9741425	A	06-11-1997	AU 711956 B2 AU 2563897 A AU 711861 B2 AU 2563997 A CA 2251674 A1 CA 2252474 A1 WO 9741424 A1 WO 9741425 A1 EP 0895592 A1 EP 1005644 A1 JP 2001503849 T JP 2000510233 T US 6107080 A US 6165335 A US 6130037 A US 5955379 A	28-10-1999 19-11-1997 21-10-1999 19-11-1997 06-11-1997 06-11-1997 06-11-1997 06-11-1997 10-02-1999 07-06-2000 21-03-2001 08-08-2000 22-08-2000 26-12-2000 10-10-2000 21-09-1999
US 5519635	A	21-05-1996	JP 2948069 B2 JP 7083935 A	13-09-1999 31-03-1995
WO 9812539	A	26-03-1998	US 6207369 B1 AU 4649597 A EP 0944820 A1 JP 2001503856 T WO 9812539 A1 US 2001021534 A1	27-03-2001 14-04-1998 29-09-1999 21-03-2001 26-03-1998 13-09-2001
US 5741462	A	21-04-1998	AU 707444 B2 AU 5918596 A CA 2216645 A1 CN 1181720 A EP 0822861 A1 JP 11511238 T WO 9636436 A1 US 5925562 A US 5751629 A US 5874214 A US 6025129 A US 6100026 A US 6284459 B1 US 5961923 A	08-07-1999 29-11-1996 21-11-1996 13-05-1998 11-02-1998 28-09-1999 21-11-1996 20-07-1999 12-05-1998 23-02-1999 15-02-2000 08-08-2000 04-09-2001 05-10-1999
WO 9805424	A	12-02-1998	AU 717981 B2 AU 3815697 A CA 2259929 A1 CN 1226845 A EP 0952890 A1 JP 2000515630 T WO 9805424 A1 US 6071478 A US 5955028 A	06-04-2000 25-02-1998 12-02-1998 25-08-1999 03-11-1999 21-11-2000 12-02-1998 06-06-2000 21-09-1999
WO 9857159	A	17-12-1998	AU 7967898 A EP 0988534 A1 WO 9857159 A1	30-12-1998 29-03-2000 17-12-1998

# INTERNATIONAL SEARCH REPORT

Information on patent family members

Int. l. Application No

PCT/US 01/01150

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5866345	A	02-02-1999	US 5637469 A 10-06-1997
		AT 155711 T 15-08-1997	
		AT 167816 T 15-07-1998	
		AT 140025 T 15-07-1996	
		AT 140880 T 15-08-1996	
		AT 174813 T 15-01-1999	
		AU 677780 B2 08-05-1997	
		AU 4222393 A 29-11-1993	
		AU 680195 B2 24-07-1997	
		AU 4222593 A 29-11-1993	
		AU 677781 B2 08-05-1997	
		AU 4222693 A 29-11-1993	
		AU 4222793 A 29-11-1993	
		AU 677197 B2 17-04-1997	
		AU 4223593 A 29-11-1993	
		CA 2134474 A1 11-11-1993	
		CA 2134475 A1 11-11-1993	
		CA 2134476 A1 11-11-1993	
		CA 2134477 A1 11-11-1993	
		CA 2134478 A1 11-11-1993	
		DE 69303483 D1 08-08-1996	
		DE 69303483 T2 06-02-1997	
		DE 69303898 D1 05-09-1996	
		DE 69303898 T2 20-02-1997	
		DE 69312483 D1 04-09-1997	
		DE 69312483 T2 12-02-1998	
		DE 69319427 D1 06-08-1998	
		DE 69319427 T2 10-12-1998	
		DE 69322774 D1 04-02-1999	
		DE 69322774 T2 17-06-1999	
		EP 0637996 A1 15-02-1995	
		EP 0637997 A1 15-02-1995	
		EP 0639223 A1 22-02-1995	
		EP 0637998 A1 15-02-1995	
		EP 0637999 A1 15-02-1995	
		ES 2106341 T3 01-11-1997	
		ES 2127276 T3 16-04-1999	
		GR 3025037 T3 30-01-1998	
		GR 3029509 T3 28-05-1999	
		HK 16897 A 13-02-1997	
		JP 7506430 T 13-07-1995	
		JP 7506431 T 13-07-1995	
		JP 7506256 T 13-07-1995	
		JP 7506257 T 13-07-1995	
		JP 7506258 T 13-07-1995	
		WO 9322053 A1 11-11-1993	
		WO 93220 A1	